EOSDIS GROUND SYSTEM (EGS) STATUS REVIEW (ESR) NOTES

MARCH 12, 1996—MORNING SESSION

SYSTEM ENGINEERING MANAGEMENT—DAN DEVITO

The following comments were made about the "top ten" system level risks:

Moshe Pneil suggested that Risk 119, underestimated science algorithm processing and reprocessing requirements, and 179, lack of agreement with external entities on interfaces may impact the design baseline, and 179 should be changed from Essential to Critical.

A new risk should be added to the top ten list in the category Verification/Certification/Validation: The simulator should have a capability test for verification.

SYSTEM OVERVIEW—BILL WATT

EGS Architecture and Interfaces

Angie Kelly said that she has started talking with Wallops about X-band backup ground stations support for AM-1 and Landsat-7. She and John Martin will be attending a meeting about this on March 28. The Landsat-7 baseline is to use NOAA sites. The architecture will be updated after this review and the Landsat ground systems review.

SYSTEM AND OPERATIONS CONCEPT—BILL WATT

H. Ramapriyan (Rama) said that it is an EOSDIS responsibility to process TRMM data and that the System and Ops Concept needs to show a path through the TRMM Data and Information System (TSDIS).

Some questions that were asked during this presentation, and the responses to them, are as follows:

1. Performance requirements: how the scenarios were used against operability. At the component level, they meet performance specifications; at the system level flows, modeling activity will be mapped to function through Software Through Pictures (StP) and through the workbench. RIDs will be written.
2. Transfer of data to long-term archives: has this been addressed? Ted Ackerson replied that CERES and LIS data is the only data we have to back up.
3. Archival of data at White Sands: There is none. Is what ends up at Fairmont backed up? Ellen Herring responded that backup in EOSDIS will be covered in the System and Operations Concept presentation; transitioning will not be covered. Dan DeVito pointed out that interface documents spell out the physical attributes of interfaces.

4. Skip Reber asked whether there is a process in mind for validation activities for Landsat, as there is for TRMM. John Martin responded that Landsat has an image assessment system (IAS), and Level 0 images will be stored with the system. He also said that Landsat will take images of ground truth sites that will be treated as Level 0R images. The EDC DAAC won't know the difference between those calibration images and any other images.

The basic question about validation activities is, can anyone in EOSDIS get to ground truth data? The response was that this is not clear, because there is no requirement to feed ground truth data back to the DAAC that uses the interface. John Lyon commented that Beryl Williams is a good person to talk to about this topic. Skip Reber pointed out that he is not talking about Landsat-7 data but data taken at sites for validation.

The conclusion of this discussion was that this topic is an important policy issue and is a request for action (RFA).

The statement was made that the IAS is planning a quarterly validation, and there is no plan to make it available to the public. However, quarterly reports will be published that will be provided to EOSDIS via guideserver. Moshe Pneil said that's not good enough. Ellen Herring said there is some confusion about various ground stations concerning X-band, EOSDIS, and contingency.

Some questions on the AM-1 Planning and Scheduling scenario and responses are as follows:

1. What is in the long-term science plan (LTSP)? The response was that details are in a detailed activities schedule that is made up later. The purpose of the scenarios is not to show details but to show how elements have to work together to accomplish objectives. Ed Chang requested that this be taken offline. Dan DeVito said that the aim has been to limit contingency ops in operational scenarios because there is so much information on nominal ops that needs to be covered; the scenarios are busy enough already. Angie Kelly commented that contingency ops will be shown at the Mission Operations Review (MOR). John Martin asked if the LTSP is actually on the books. John Lyons commented that the LTSP is at the top of the AM-1 planning and scheduling scenario: is the data coming from other sources, or does this represent the actual flow? His concern is processing plans and utilization . Skip Reber said this is a different question: processing plans and utilization are being addressed, but not in the LTSP.

An action flowing from this discussion is that Ed Chang wants to meet with Bill Watt after the review to give him corrections on the ASTER scenarios, which he says are not entirely accurate.

2. Skip Reber had a question on what the ECS System Monitoring and Coordination Center (SMC) is, and the response was that the last scenario in this presentation puts the SMC in context.

The comment was made that, at this point, the Level 0 data has been placed in context, but nothing has been done with it. There was then a question about where Level 0 data is archived. Dan DeVito responded that Level 0 data is kept within EDOS for 60 days and also goes to the backup archive at Fairmont; he will work this further with the DAACs.

Questions and comments on the Data Processing, Ordering, Quality Assessment, and Distribution scenario are as follows:

The scenario assumes that users will be looking at the data immediately, which is not the case. Users will want to see what happened recently. If there's a major event such as an earthquake or a flood, everyone will want something at once. The perception is that the system is not sized to handle this kind of event, so it is a real problem. Retrospective orders for data come from users who need a real-time opportunity; subscription orders come from people who will get around to looking at the data eventually but don't need it immediately. Ellen Herring's reply was that CDR will answer "a day in the life."

Greg Hunolt commented that nothing is actually addressed at this level. Moshe Pneil said that the favorite scenario is "A day from hell"-- a volcano erupting, earthquake, or flood. The SMC begins to have obvious involvement here.

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DAAC OVERVIEW—Greg Hunolt

G. Hunolt said that Version 0 has been successful partially because of the team aspect, and Headquarters is now trying to undo the team approach. A discussion ensued about the risk of federation to the DAACs, including the effect of closure of the MSFC DAAC on TRMM support.

DATA PROCESSING, DISTRIBUTION, AND ARCHIVAL (CSMS/SDPS)—DAWN LOWE

Rama pointed out that the EGS overview diagram for the CSMS/SDPS shows only functions that producer SCFs have and needs to show the functions of pulling SCFs.

Dawn Lowe pointed out that the diagram shows a multi-release approach to releases and a multi-track approach. In response to a question, she said that IR-1 is a TRMM infrastructure release.

Eighty nonconformance reports (NCRs) have been written; about 30 are still open. More will be written. Independent Verification and Validation (IV&V) had 30-38 NCRs/discrepancy reports (DRs). Not every DR by IV&V will be on the ECS contractor (Hughes).

FLIGHT OPERATIONS SEGMENT (FOS)—MIKE RACKLEY

FOS has decided to use instrument support teams (ISTs) and not the user planning system (UPS).

FOS risks are not large.

ECS ACCEPTANCE TEST AND LIFE CYCLE ANALYSIS—DARRYL LAKINS

John Lyons wants to talk to Darryl Lakins offline about security.

Skip Reber had several concerns about Discrepancy Reports (DRs): (1) how they are entered; (2) whether there is a process in place for closing the DR; and (3) whether the originator is to be involved in closing the DR or notified by the Integrated Test Team (ITT) of a DR closure. He also had a concern about tracking DRs: Does the originator need to constantly inquire about the status? The response was that (1) a user enters a DR through a Distributed Active Archive Center (DAAC), and (2) the originator can monitor the progress of a specific DR by using the Discrepancy Report Tracking Tool (DRTT) on the World Web Wide. (The DRTT was demonstrated at lunchtime the following day.)

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DATA CAPTURE/LEVEL 0 PROCESSING (EDOS)—ALAN JOHNS

Alan Johns reported that the EDOS Reshape and Replan resulted in severe schedule compaction in which conventional reviews were short circuited.

Moshe Pneil asked why he was even showing RIDs. The answer was that the RIDs explain some things in schedules.

EDOS has the riskiest schedule—Only 20 days of slack for getting to Version 3 and beyond.

An internal operational demonstration (IOD) has already taken place, in which the system was simulated.

Moshe Pneil asked if EDOS is going to build standalone and then interface with the rest of the system. The answer was yes and no. In addition to the IOD, EDOS is planning an engineering level test and testing from contractor sites.

The question was asked when ETS comes into play; this will occur for the next demo release October 11.

Alan Johns commented that, to make Reshape happen, EDOS has some contract things to get through.

Moshe Pneil asked how EDOS tracks its schedules—Is a critical path identified so that slips can be identified? The answer was that TRW has a very comprehensive critical path schedule they exhibit often. Alan Johns said he would get a copy and bring it in that afternoon for Moshe to look at. (This was done.)

Ellen Herring commented that a number of milestones are on the way that will show whether EDOS is meeting its milestones. A concern was expressed that this is being done in a closed environment, along with a question: How can EDOS make things visible to other people so they can see if their needs are being met?

The next public display of EDOS will be at the SLR.

EOSDIS NETWORKS—HAL FOLTS

John Lyon asked Hal the question, was data being sent on EBnet compressed or uncompressed? The answer is that it is all uncompressed. Dick desJardins added that this is a system issue, not a networks issue. John Lyon asked for trade studies on this issue.

An action was requested for Matt Schwaller to contact Ed Chang about EBnet Level 3.

Moshe Pneil asked about the direct impact of network performance: what is the network doing if requirements are not met, and what is the cost impact? Dick desJardins replied that there is sufficient budget for EBnet and NSI to meet their requirements. The 1X outflow is being built. In response to the question, what if user demand is greater?, he said that there will be a capability to chart users.

Jack Leibee asked a question about costs on trade status; the answer was that there are detailed costs that can be discussed offline.

Questions on the transfer of data were as follows:

1. Q: How does the transfer of data from White Sands to Fairmont occur? A: By tape.
2. Q: Do you consider the rates conservative? A: T3 is conservative. The average data rate for White Sands to GSFC is half of T3; the average overhead is 22 Mbits/second.

Steve Smith (Hughes-Hays) commented that there is a very flexible system of database requirements.

Moshe Pneil pointed out that buying circuits costs money and asked what rule of thumb is used as a margin to determine if there is excess capacity. Dick desJardins said that the ESDIS Network System Engineering has given a peaking factor of 50 percent.

The EBnet topology will be a strawman until after the EBnet and NSI combined review in May, at which time the exact topology for EBnet will be finalized.

Skip Reber expressed concern about missing QA flow requirements. The answer was that QA flow requirements are given by the Ad Hoc Working Group; Yun Chi Lu of that group is the source of the data flow requirements.

Moshe Pneil thinks that the QA SCF chart is incomplete (p. HF-14). Dick desJardins said that those are driver flows, and some other flows were left out.

One of the top ten risks is in the networks area: scientists can't look at all T3s for MOIS. T3s have been cut to 10% now. The two risks listed are not considered too serious now. Moshe Pneil had a question that affects both: If the networks don't meet the requirements, this will affect media. There is a question whether the use of COTS equipment is adequate. Dick desJardins said there is sufficient budget to meet the requirements. Also, if there is greater than a 1x data outflow out to the general user, users can be charged. There will be time for the whole project to respond to that.

There was a question about mitigation for the first risk, requirements volatility. The response was that budget mitigation is a proactive mitigation activity. Dick desJardins said that budget contingency relates to the adaptive downlink. Also, lower performance can be accepted until 2x is reached. Network cost reductions is the contingency the project is hoping for.

There was a question on the EBnet diagram: how will the link with expedited ASTER data flow be done? Angie Kelly said that two scenes of expedited data will be provided to the Japanese ground system that will come from GSFC or EDC.

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GROUND STATIONS: LOU KALIL (substituting for Pat Hennessy)

Paul Hwang stated that PM-1 does not require real-time commanding at S-band (p. PH-3).

The question was asked, is avoidance of TDRSS to cut costs? The answer was that, with TDRSS, have to put in steerable high-gain antenna. An adaptive downlink approach will be used.

Paul Hwang had a question about one of the risks having to do with electronic data transport from Svalbard: What does the link do to the rest of the system? Candace Carlisle said that the Reshape team has been looking at this for a month. This is one of main things that came out of Reshape.

Angie Kelly said that, in the context of the AM-1 mission, if AM-1 is left as it is, we may not have to augment until much later.

SCIENCE SOFTWARE--STEVE KEMPLER

Steve stated that PDPS+ science software = PGS. He deals with PGS; PDPS deals with policy issues.

The question was asked, what is the difference between the SSI&T environment and the production environment? What is an investigator going to see when he puts stuff in to test it? Steve Kempler said he shouldn't see any differences.

EGS INTEGRATION AND TEST—JANICE SMITH

Moshe Pneil and Skip Reber are going to write up an RFA saying that Janice Smith should be in charge of integration and test.

In response to a question, Janice said that all schedules are coming from a common project database in Prestige. Conflicts can be identified by using this database. Moshe and Skip asked, what is the critical path?

Moshe and Skip recommend that everything after government acceptance be under a testing czar, and that czar be Janice Smith.

SCIENCE SOFTWARE INTEGRATION AND TEST—STEVE KEMPLER

The three options are infusion, big bang, and incremental. The instrument team will decide on one of these three.

MISSION OPERATIONS—ANGIE KELLY

Angie stated the mission operations goal: EOS is a science mission. The primary goal and reason for mission operations is to fly the spacecraft.

Angie also said that, for future missions, the ESDIS project will provide the whole FOT.

SCIENCE OPERATIONS--GREG HUNOLT

Moshe Pneil had the following comment on the Risks slide: The word “underestimated” is used in four of the five science ops risks. What has been underestimated? The meaning has not been crisply defined. Greg Hunolt has an action to define crisply what is meant by “underestimated.”

WRAP-UP--BILL MACK

Bill Mack said he thought the ESR was a good review, and that participants ought to think about what future reviews should consist of.